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Spring and Fleets of Chartered Buses Bring Students to Washington from all over the Country to Start Their Sight-Seeing at the Steps of the Nation's Capitol

(SEE BULLETIN NO. 2)

B. ANTHONY STEWART AND JOHN E. FLETCHER

a few other areas is extensive farming possible, yet four out of five persons work at tilling the soil.

A great store of natural resources is known to exist, perhaps the most valuable in Western Europe. Huge tracts of forest land constitute part of this wealth but the big treasure lies underground. Yugoslavia has important reserves of copper, iron, chrome, magnesite, manganese, and bauxite from which aluminum is made, all minerals very much in demand now. Other deposits include coal, oil, mercury, lead, and zinc.

Resources Being Exploited—The government is now exerting all efforts to exploit these largely undeveloped resources in the national interest, because Yugoslavia's position has been dangerous since 1948 when it refused to take any more orders from Moscow and quit the camp of the Soviet. Russian satellites line most of its land frontiers.

Although at deadly odds with Soviet Russia, Yugoslavia has a communist government, ruled by a dictator. Yugoslavia's brand of communism has been diluted to some extent in recent years, as necessity has forced it into a loose, unofficial alliance with the West against possible Soviet aggression. Despite the change, however, many freedoms remain curtailed and the rule is stern.

The head of the state is Marshal Josip Broz, better known as Tito. This latter name stems from the days when he commanded a guerrilla army which fought the German occupation forces from forest and mountain during World War II. It is a Croat phrase which, freely translated, means "Do this! Do that!"—a reference to the firm way he gave orders to his guerrilla fighters.

The people are a sturdy stock, noted for their fierce patriotism, love of independence, and stubbornness in their convictions. These traits played a part in the resistance to Soviet methods that were introduced during the days when Yugoslavia was a Red satellite just after World War II. They may be one reason why Tito got tired of kowtowing to Kremlin orders and decided to go it alone in defiance of Stalin.

Because of the constant threat of aggression, Yugoslavia must maintain the largest army in Western Europe. The population is a little over 16,000,000, so military service drains off many people from profitable work on farms or in mines and factories. For this reason, the United States has been giving the Yugoslavs economic aid to build up their country. Military equipment is also being supplied. This is not because Washington approves of Tito's communist government, but because the country bolsters the general defense of the West against Soviet attack.

References—Yugoslavia is shown on the National Geographic Society's maps of Europe and the Near East, and Central Europe. Write the Society's headquarters, Washington 6, D. C., for a price list of maps.

For additional information, see "Yugoslavia, Between East and West," in *The National Geographic Magazine* for February, 1951; "The Clock Turns Back in Yugoslavia," April, 1944; "Echoes from Yugoslavia" (16 photographs), June, 1941; "Kaleidoscopic Land of Europe's Youngest King," June, 1939; and "Yugoslavia—Ten Years After," September, 1930. *(Back issues of the Magazine may be obtained by schools and libraries from the Society's headquarters at a special discounted price of 50¢ a copy, 1946 to date; 90¢, 1930–1945; $1.90, 1913–1929. Earlier issues at varied prices.)*

ENTERED AS SECOND CLASS MATTER APRIL 27, 1943, POST OFFICE, WASHINGTON, D. C., UNDER ACT OF MARCH 3, 1879.
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VOLKMAR WENTZEL

The Fruit of Yugoslavia's Orchards and Vineyards attracts buyers in a Zagreb street market. Workman on scaffold restores a war-damaged apartment house.

Bulletin No. 1, April 13, 1953

East Meets West in Yugoslavia

MAKE an alphabetical list of all the nations in the world and you'll find Yugoslavia in the last place. Geographically, politically, and historically, however, this stretch of the Balkan Peninsula occupies a far higher position—particularly today.

The people say that at their country West meets East. That may be one explanation for the troubles that long have beset the land. It has been a cockpit for conflict. Conquerors have used its valleys for highways. During World War II it suffered cruelly. Now it thwarts Soviet domination of the Balkans.

Physically, Yugoslavia is a rugged country, three-fourths of it mountainous or hilly (map, last page). Only along the Danube River and in a

rutted and dusty. The Capitol's porticoes and dome had not been completed (illustration below). The Washington Monument was an abandoned stub, less than a third of its present majestic height. As they had in the past, visitors from Europe regarded the capital with contempt and derision. One American wrote of it as a "rude colony."

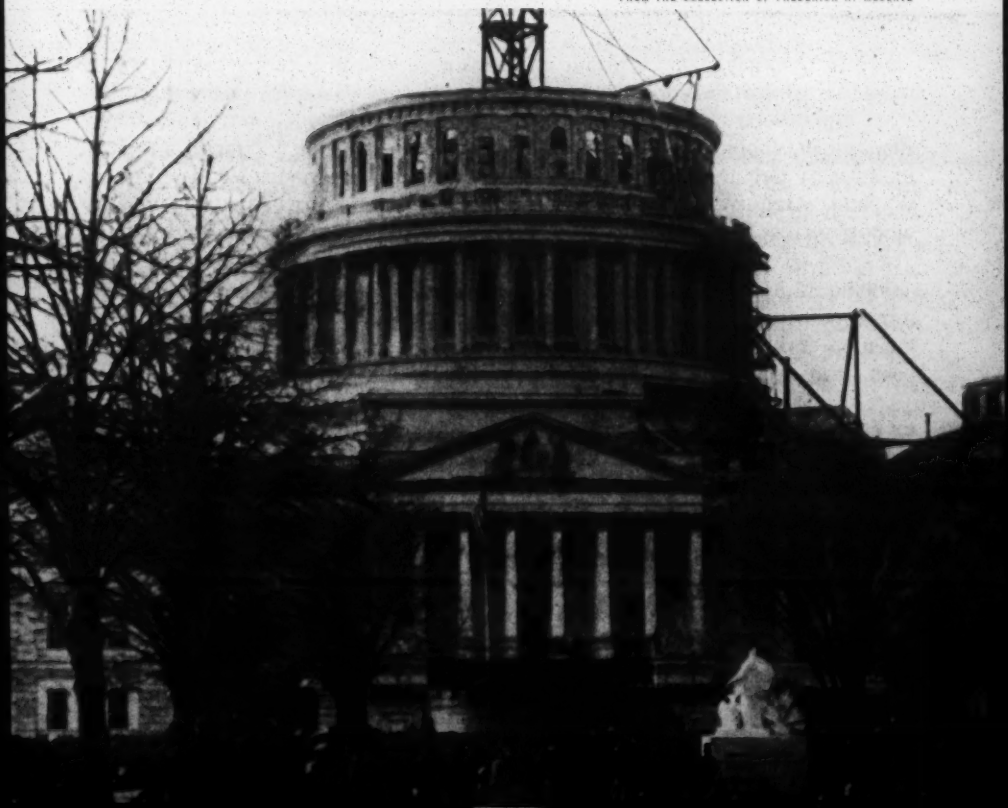
Washington remained largely a provincial city until toward the close of the last century when the nation began emerging as a world power. Wealthy people began moving there to participate in the quickening political and social life. They built impressive homes on the long empty avenues laid out by the original planners. New government buildings, museums, and art galleries arose. The majestic Federal City of which George Washington had dreamed became a reality.

References—The Society has published A Pocket Map of Central Washington which, on the reverse side, shows Suburban Washington, D. C., Maryland & Virginia.

For further information, see "Washington's Historic Georgetown," in *The National Geographic Magazine* for April, 1953; "Across the Potomac from Washington," January, 1953; "U. S. Capitol, Citadel of Democracy," August, 1952; "Washington, Home of the Nation's Great," June, 1947; "Washington—Storehouse of Knowledge," March, 1942 (out of print; refer to your library); numerous other articles listed in the *Cumulative Index to The National Geographic Magazine;* and, in the GEOGRAPHIC SCHOOL BULLETINS, April 7, 1952, "Cherry Trees Lure Thousands to Washington."

In Front of the Unfinished Capitol, Crowds Gather for Lincoln's First Inauguration—The Civil War did not halt building operations. Within three years the statue of Freedom stood in place atop the completed dome. The city was an armed camp. Streets were churned into rutted lanes. Pigs and geese roamed at large.

FROM THE COLLECTION OF FREDERICK H. MESERVE



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Bulletin No. 2, April 13, 1953

Nation's Capital Once Ugly and Shunned

SPRINGTIME heralds the start of the annual flood of visitors to Washington, the beautiful. Thousands come from all parts of the country to admire their nation's capital. Their number includes many school children (illustration, cover); very often entire classes make the trip.

The city looks its best at this time of year. Sight-seers are impressed by the stately government buildings, gleaming white in the sunshine, by the broad avenues, fine hotels, and numerous parks. It is easy to believe that Washington always had something like its present majesty. Some guests never suspect it was once such a wretched place that Congress debated abandoning it and moving the capital to Baltimore.

White House Cornerstone laid in 1792—Work on surveying and planning the capital began in 1791. What is now the heart of the city scarcely looked inviting. Swamplands edged the banks of the Potomac. Beyond them the landscape was mostly wild and overgrown, dotted with patches of woodland. Here the cornerstone for "the presidential palace," as the White House was then called, was laid in 1792, and for the "congress building" (Capitol) the following year.

The government moved to the city from the temporary capital at Philadelphia in the spring of 1800. Federal officialdom then numbered less than 150. The newcomers found fewer than 400 buildings, most of them miserable shacks and log cabins. One arrival noted that the yet unfinished White House was surrounded by rough rail fence "unfit for a decent barnyard."

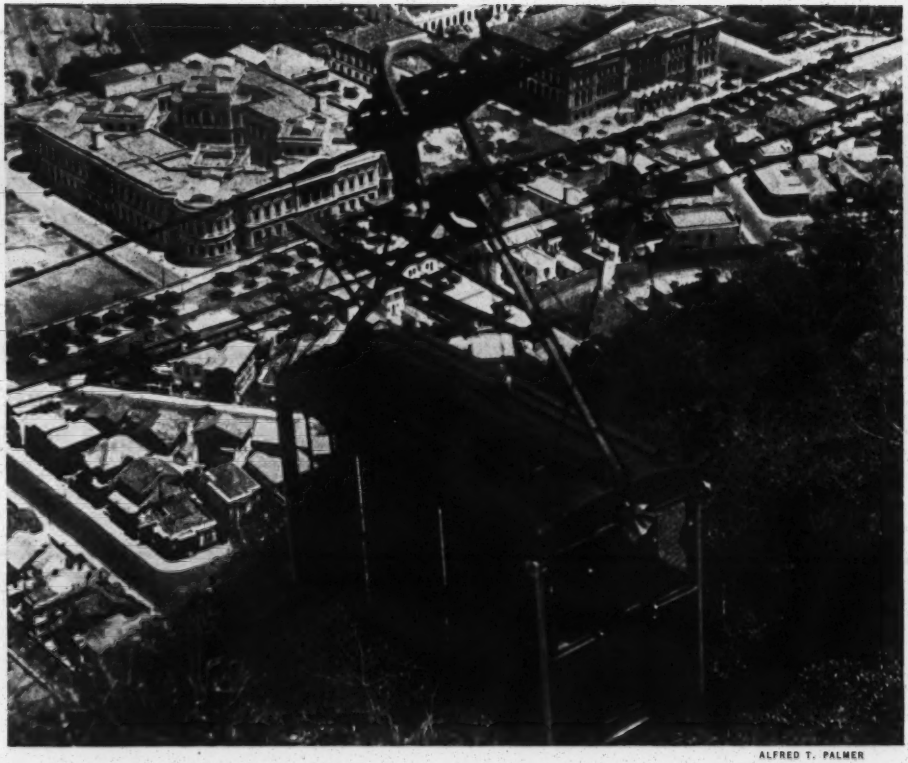
Rain turned the unpaved streets into a sea of mud, so deep that horses sank down to their bellies. When it turned cold after a storm, the wheels of carriages and wagons froze in the mire. In dry weather thick dust was whipped by the wind into such a fog that near-by objects became invisible.

Washington today is a coveted diplomatic post. In those early times it was an assignment to make envoys shudder. "What have I done to reside in such a city?" wailed one despondent Frenchman.

Original District Consisted of Three Parts—At first the District of Columbia had three parts: Washington City, where the federal buildings were; Georgetown, a thriving port founded in 1751; and a part of Virginia including Alexandria. This Virginia area was later given back to the state.

Up until the eve of the Civil War many congressmen and high officials preferred to make their homes in Georgetown. Envoys had their headquarters there. It was the center of social and cultural life. In the early 1800's members of the government who stayed in Washington lodged in crowded boardinghouses and ate at one long table, often 30 at a time. Even though Vice President, Jefferson was given the lowest and coldest place at table in the boardinghouse where he lived—and he did not get a better one when he was elected President. Toward the end of Jefferson's first term, Congress debated packing up for Baltimore. The bill lost by 10 votes.

In Lincoln's time the city was, for the most part, ugly and dirty. Marshes along the Potomac bred malaria. Pennsylvania Avenue was



ALFRED T. PALMER

Swung Between Earth and Sky, passengers in this cable car get a fine view of Brazil's metropolis as they glide from Sugar Loaf peak to Rio de Janeiro's ground floor.

Pittsburgh, too, has cable lines up steep riverside slopes. In boxlike cars, counterbalanced on the cable so that one goes down as the other goes up, more than 2,000,000 people annually travel to their places of business. Before the turn of the century, Washington, D. C., had a steam-driven hemp-rope line that carried passengers over a five-mile route from the Navy Yard (now the Naval Gun Factory) to Georgetown.

Both aerial cableways and cable railways are widely used in mountain work. Brazil has a scenic cable car which rises from sea level to the top of Sugar Loaf, the peak towering 1,300 feet above Rio de Janeiro's harbor (illustration, above). At Niagara Falls, an aerial cable car takes passengers across an angle of the river bank high above the surging Whirlpool Rapids.

The world's longest aerial cableway transports ore 60 miles from Sweden's Boliden mines near the Arctic Circle. A 14-mile aerial cableway brings asbestos from high in the mountains down to Barberton, South Africa. In recent decades American engineering has blazed the trail for hundreds of industrial cableways.

References—For additional information on railroads, see "Trains of Today—and Tomorrow," in *The National Geographic Magazine* for November, 1936.

See also, "San Francisco Ponders Fate of Cable Cars," in the GEOGRAPHIC SCHOOL BULLETINS, April 28, 1947.

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Bulletin No. 3, April 13, 1953

Quaint Cableways Still Make the Grade

THE Japanese government is considering several applications for permits to reopen cable-car lines or build new ones. This is one more indication that the seemingly old-fashioned travel device will probably carry on as long as men need a quick and safe method of taking heavy loads of passengers and freight up and down steep grades. Still in service over the world are many aerial and ground ropeways, cableways, and cog railways.

Of Japan's 26 prewar cable-car lines, 12 are now operating. Two applicants want to haul passengers to the top of Mount Fuji.

Ropeways, of which the simple ski tow is an example, have been used for 20 centuries or more. The simplest form, a single ropeway, consists of an endless rope, or cable, which runs between two terminal drums and passes over pulleys suspended from posts. From this rope are hung buckets, seats, or trays, which move with the rope.

Ropeways Require Little Upkeep—Another version is the double ropeway in which the bucket is hung by a pulley on a stationary rope. A hauling rope propels it. Ropeways are easy to construct and to keep in working order. There are no roadbeds to keep up, and bad weather does not hamper their operations, but they can be used only for conveying.

The aerial cableway was developed from the ropeway and it can both hoist material and dump it at any given point. The trackway, a single span of suspended cable, runs horizontally or at an incline which will permit a load to be carried down by gravity. The cable rests on the tops of terminal towers which may be mounted on wheels and rails, so that the device may be moved from place to place. This is most useful in the construction of harbor facilities.

The first cog railway in the world—one of the rack and pinion type—has climbed to the summit of Mt. Washington, New Hamphire, since 1869. The "rack" is a pair of extra rails held by evenly spaced bolts between the outer rails of the track. The sturdy little engine is fitted with a strong gear whose teeth, or cogs, mesh into the spaces between the bolts. For additional safety, the passenger car has a similar gear.

Electricity Now Powers Pikes Peak Scenic Railway—The 62-year-old cog railroad to the top of Pikes Peak, Colorado's 14,110-foot mountain, is called the world's highest scenic mountain railway. It was converted from steam to diesel-electric power in 1946.

Europe's oldest mountain railway is the rack road up Mt. Rigi, in Switzerland. The fantastic Transandine railway connecting Santiago, Chile, with Mendoza, Argentina, has cog sections, as has the line from Rio de Janeiro to Petropolis in Brazil's Organ Mountains.

Cable cars hauling passengers up steep grades are still a memorable "sight" in hilly American cities. San Francisco, starting in 1873, developed 112 miles of track with cable of hemp as well as steel moving on pulleys and drums laid below the street surface. Ten miles of the 17 remaining are privately owned, but the city has title to the famous Powell Street line from the Market to Fisherman's Wharf. In 1947, when there was discussion of discontinuing it, citizens voted for its preservation.

Experts say the transistor—a speck of germanium and a wire in a capsule—does an ordinary vacuum tube's work at a fraction of the cost and more efficiently. Unlike a tube, it requires no warming-up period, hence are always ready for action. In a few years, when supplies increase, scientists predict much smaller radio and TV sets for the public.

Less frequent trips to the dentist are in sight then, too. Fillings now used have a tendency to shrink and fall out, requiring new ones. Germanium when mixed with certain other materials does not shrink, which is good news for those dreading the dentist's drill. Hearing aids using the metal are said to be so small as to make present ones look antique. Longer-lasting gold plating on jewelry is made possible by adding germanium. Jewelry-repair work is simpler and quicker.

It was not until 1942 that scientists at Purdue University discovered the great value of germanium in electronics. Prior to that, the metal had been a laboratory curiosity to be studied and thrown away.

Not a New Discovery—The metal was discovered in 1886 by Clemens Winkler, a German chemist, who named it for his country. Fifteen years earlier, however, Dmitri Mendeleev, famed as the father of the first widely used periodic chart of the world's elements, had forecast the metal's discovery and described its probable properties.

Unlike gold, copper, and other metals, germanium does not exist as a separate ore. At first it was found only as minute particles in the smoke of zinc furnaces. Some of the present supply is the byproduct of zinc plants, but it takes two and a half million pounds of zinc to yield one pound of germanium.

The United States Bureau of Mines, which is pushing research to develop a greater germanium supply, found microscopic amounts in the nation's coal (illustration, above)—one one-thousandth of one per cent—but the cost of extracting it from coal would be sky high. A more economical way is to refine it from the ashes bought from factories burning huge amounts of coal. Ashes containing the metal recently brought as high as $57 a ton. Recovery of germanium from them still is an expensive process, but Bureau of Mines experts hope to make it cheaper.

After germanium's electronic value became known, production ran about 1,000 pounds a year. Output for 1953 is expected to be about 6,000 pounds, but it is estimated that by next year industrial needs will be 15,000 pounds. The Bureau of Mines is now gathering samples of ashes and flue deposits from major coal-burning public utility plants in Pennsylvania, Ohio, Kentucky, Illinois, Alabama, West Virginia, and also from the Tennessee Valley Authority, in hopes of locating new supply sources.

References—See also, "Metal Sinews of Strength," in *The National Geographic Magazine* for April, 1942 (out of print; refer to your library); and "Atom Researchers Seek Travancore's Sand," in the GEOGRAPHIC SCHOOL BULLETINS, February 4, 1952.

GEOGRAPHIC MAPS—TIMELY AIDS TO EDUCATION

Classrooms need accurate, up-to-date maps for history interpretation and current events analysis. The National Geographic Society's many-color wall maps answer these needs. They cover the world. 50¢ apiece in U. S. and elsewhere. Eight enlarged maps are $2.00 each in U. S. and elsewhere. Send for complete map list.

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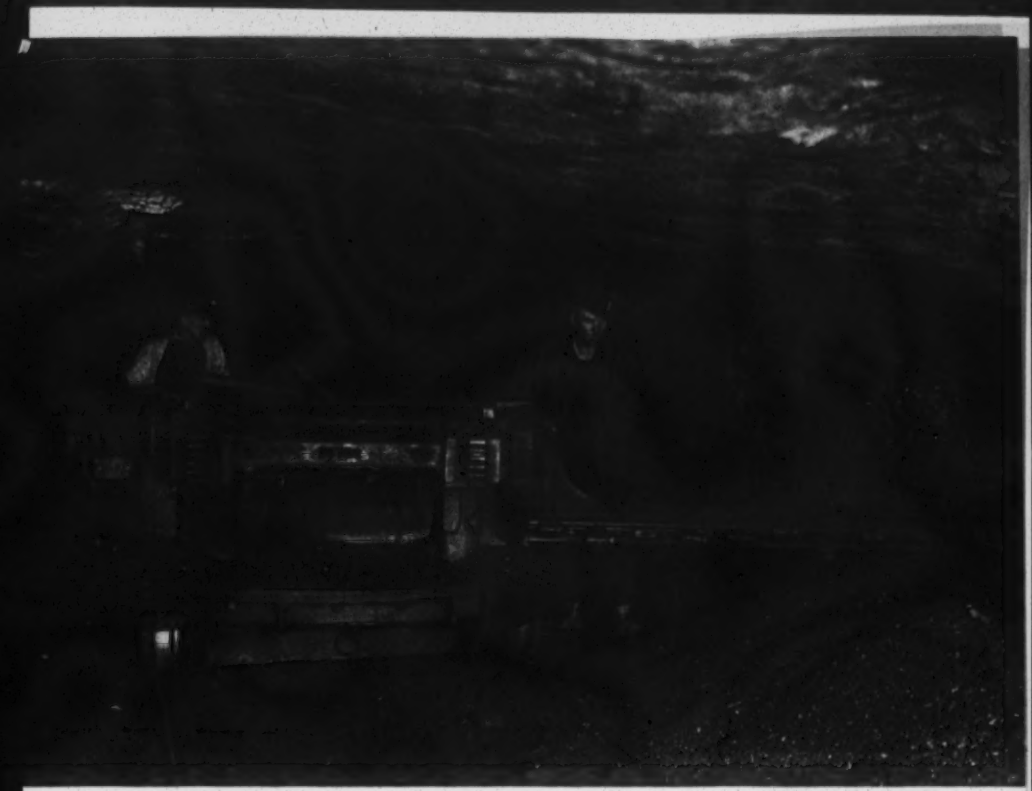

BITUMINOUS COAL INSTITUTE

This Cutting Machine Eases the Coal Miner's Work—The powerful blade cuts out a rich vein, saving heavy blasting and outmoding the pickax. From the ashes of burned coal comes germanium, a rare metal used in electronics and worth $350 a pound.

Bulletin No. 4, April 13, 1953

Magic Metal Comes into Its Own

GERMANIUM? To very many people this is a strange new word, but one they will be hearing or reading about a lot in the future. It is the name of a Cinderella metal discovered in 1886, then virtually forgotten until recent years.

Today germanium is $350 a pound, or almost the cost of two-thirds of a pound of gold. Oddly enough, the supply of this rare metal comes mainly from such unlikely sources as ash heaps, chimney stacks, and even smoke.

A grayish-white crystalline substance, germanium is now being used to make transistors, small devices that do the work of a radio or television vacuum tube; thimble-size electric rectifiers; sound amplifiers; camera and microscope lenses; hearing aids; and dental fillings. It may prove valuable in the manufacture of a number of other items.

Much of the present supply is going into defense equipment like radar, submarine sounding instruments, automatic range computers, and "mechanical brains." Germanium transistors, about half the size of a paper clip, are displacing most of the larger and more fragile vacuum tubes, particularly where small size and little weight is essential, as in radar for warplanes.

Satellites of Russia Circle Yugoslavia

This is the mountainous country of the Serbs, Croats, and Slovenes. Together, these peoples are known as South Slavs, the term from which comes the name Yugoslavia (Bulletin No. 1).

Their nation was formed at the end of World War I by joining Serbia with parts of the old Austro-Hungarian empire. Later the Kingdom of Montenegro was added.

There are more Serbs among Yugoslavia's 16,000,000 inhabitants than any other one people, but the population is extremely varied. A tenth are Moslems, although Slavic stock predominates.

Ancestors of today's worshippers of Mohammed were converted to that religion in the days when the country was part of the Ottoman Empire. Traces of the centuries of Turkish rule are still seen in an occasional veiled woman, a fez, and minarets which soar skyward from many mosques.

The breadbasket of the country is the fertile region wedged between the curve of the Danube and the borders of Hungary and Romania. There nearly half the arable land is in co-operative farms. Chief crops are grain, soybeans, sugar beets, and potatoes.

On the west, Yugoslavia fringes into the Adriatic with the isles and headlands of the Dalmatian coast. There the mild Mediterranean climate produces such fruits as lemons, tomatoes, and grapes. Dalmatia is a popular resort area, particularly from June to September.